5. The artificially increased natural resistance in the peritoneum of animals caused by previous injections of such fluids as bouillon is probably due to similar changed osmotic conditions which allow the passage of complement from the circulating blood.—F. P. G.

The Relationship Between Human and Bovine Tuberculosis.—J. G. ADAMI (*Manchester Medical Chronicle*, March, 1902) has confessed himself to be of an open mind on many of the points involved in this discussion, which was brought to a height by Koch's rather startling paper before the London Congress of Tuberculosis in 1901; but after a full and judicious review of the work of others, and from his own experience, he ventures pretty definite conclusions on the more important points in question.

Bovine tuberculosis can be and usually is transmitted from cattle to cattle by inhalation or contamination of the various discharges. Human tuberculosis is likewise transmissible to cattle, but is not markedly virulent except as a mixed infection. Certain breeds of swine seem to show more marked susceptibility than others to this form of infection.

Human tuberculosis is usually transmitted from man to man, and the organisms of human tuberculosis vary somewhat culturally and pathogenically from the bovine variety, but not to the point that we should be justified in regarding the two as different species.

Bovine tuberculosis may be transmitted from cattle to man either through wounds or through the alimentary canal by food, the latter form of infection being almost entirely limited to children. Milk infections probably take place only in cases of advanced disease in animals in which large numbers of bacilli are present. Animals showing either physical signs of tuberculosis or reaction to tuberculin should be killed.—F. P. G.

Agglutination in Mixed Infections, and Their Means of Diagnosis.—CASTELLANI (*Zeitschrift für Hygiene*, 1902, Band xl. p. 1) has experimentally shown the coexistence of several specific agglutination properties in the blood of mixed infection, and has indicated a method which may prove of great value in the diagnosis of infections due to more than one microorganism. The work has been done principally on rabbits, and the organisms chiefly used were the B. typhosus, B. coli, and B. pseudodysenteriæ (Kruse). He finds in experimental mixed infections brought about by the inoculaton of subminimal lethal doses of living bouillon cultures that the blood of the animal acquires agglutinative properties for each of the organisms—properties equal in onset, intensity, and duration to such properties as existing in an infection caused by any single organism. When a second infection follows the first after a lapse of time, the agglutinative power for the second organism follows the regular course, and the agglutination for the first organism is in nowise affected. In mixed infections in man the several specific agglutination properties are found to be present. This would readily serve for the diagnosis of mixed infections if it were not for the fact that normal agglutinative properties may exist in the blood for organisms other than that causing the infection. To obviate this the author has devised the following scheme: He finds that when 2 or 3 c.c. of serum of an animal infected with a single organism are placed for twenty-four hours with a considerable mass of the causative organism, these will settle to the bottom, and the serum—before this treatment highly agglutinative—will lose not only all agglutinative power for the causative organism, but also its natural agglutinative properties for other organisms. With the serum, however, of an animal infected or immunized with two or more organisms (A and B), saturation with A, for example, will remove all the agglutinative properties for A, but in nowise affect those of B.—F. P. G.

Presence of the Bacillus of Eberth in the Blood of Typhoid Fever Patients.—M. BUSQUET (*La Presse Médicale*, 1902, No. 50, p. 593) records forty-three cases of typhoid fever, in all of which he was able to isolate the typhoid bacillus from the blood during life. In thirty-three examinations the result was positive in the first culture, seven times in the second culture, twice in the third culture, and once the organism was not obtained until the fourth trial. The bacillus was obtained twenty-two times between the fourth and seventh days, sixteen times during the second week, and five times during the third week. It was, moreover, isolated from the blood in eight cases before the Widal reaction was positive. In only twenty-nine of the forty-three cases was the typhoid bacillus found alone, for in the other cases organisms such as the pneumococcus, streptococcus pyogenes, and staphylococcus pyogenes aureus were likewise present. Most of the cases with mixed infections were either clinically atypical or exceedingly severe. The technique was similar to that described by Cole, etc., except that only 1 to 5 c.c. of blood was used, and this amount was distributed among twenty to thirty flasks, containing 250 c.c. of bouillon each.

Busquet draws particular attention to the clinical value of this method of diagnosis in atypical cases of typhoid fevers, and also dwells on its use as a means of early diagnosis. He believes it especially helpful in cases when the Widal reaction is delayed. Such methods are, of course, not available for private practice, but in large, well-equipped hospitals the author thinks their adoption would be of great advantage.—W. T. L.

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